

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-7. (Cancelled).

Claim 8. (Previously Presented) A sensing system for measuring a parameter, said system comprising:

a single sensor element, said single sensor element providing a sensor signal that varies with the measured parameter;

a first output circuit responsive to the sensor signal and providing a first output signal;

a second output circuit responsive to the sensor signal and providing a second output signal, wherein the first and second output signals are two of multiple outputs from the single sensor element, and wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system; and

a supervisor circuit, said supervisor circuit monitoring the sensor element and the output circuits, said supervisor circuit forcing the first or second output signals to change to a diagnostics range in response to an electrical failure with the sensor element or the output circuits and combinations thereof.

Claim 9. (Previously Presented) A sensing system for monitoring a parameter of a vehicle, said system comprising:

a single sensor element for sensing the parameter, said single sensor element providing a sensor signal;

shared circuits coupled to the sensor element, said shared circuits providing sensing system operations;

a first output circuit responsive to the sensor signal from the shared circuits, said first output circuit providing a first output signal;

a second output circuit responsive to the sensor signal from the shared circuits, said second output circuit providing a second output signal, wherein the first and second output signals are multiple outputs from the sensor element; and

a supervisor circuit, said supervisor circuit monitoring the sensor element, output circuits, and the shared circuits, said supervisor circuit forcing the first or second output signals to change to a diagnostics range in response to an electrical failure with the sensor element, the output circuits, or the shared circuits and combinations thereof.

Claims 10-11. (Cancelled)

Claim 12. (Original) The system according to claim 9 wherein the sensor element is selected from the group consisting of Hall-effect sensors, inductive sensors, magneto-resistive sensors, encoders and potentiometers.

Claim 13. (Original) The system according to claim 9 wherein the sensing system monitors a throttle plate position in a throttle body.

Claims 14-18. (Cancelled)

Claim 19. (Previously Presented) A sensing system for measuring a parameter, said system comprising:

a single sensor element, said single sensor element providing a sensor signal that varies with the measured parameter;

a first output circuit responsive to the sensor signal and providing a first output signal;

a second output circuit responsive to the sensor signal and providing a second output signal, wherein the first and second output signals are two of multiple outputs from the sensor element; and,

a supervisor circuit, said supervisor circuit monitoring the sensor element and the output circuits, said supervisor circuit forcing the first or second output signals to change to a diagnostics range in response to an electrical failure with the sensor element or the output circuits and combinations thereof.

Claim 20. (Previously Presented) A sensing system for measuring a parameter, said system comprising:

a single sensor element, said single sensor element providing a sensor signal that varies with the measured parameter;

a first output circuit responsive to the sensor signal and providing a first output signal;

a second output circuit responsive to the sensor signal and providing a second output signal, wherein the first and second output signals are two of multiple outputs from the sensor element;

a supervisor circuit, said supervisor circuit monitoring the sensor element and the output circuits, said supervisor circuits forcing the first or second output signals to

change to a diagnostics range in response to an electrical failure with the sensor element or the output circuit and combinations thereof; and

wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system.

Claim 21. (Previously Presented) A method of sensing a parameter, said method comprising:

sensing the parameter with a single sensor element and providing a sensor signal indicative of the parameter;

applying the sensor signal to a first output circuit, said first output circuit providing a first output signal indicative of the sensed condition;

applying the sensor signal to a second output circuit, said second output circuit providing a second output signal indicative of the sensed condition, wherein the first and second output signals are two of multiple outputs from the sensor element; and,

monitoring the operation of the output circuits and the single sensor element by a supervisor circuit, said supervisor circuit forcing the first output signal or the second output signal into a diagnostic range in response to an electrical failure with the sensor element or the output circuits and combinations thereof.

Claim 22. (Previously Presented) A method of sensing a parameter, said method comprising:

sensing the parameter with a single sensor element and providing a sensor signal indicative of the parameter;

applying the sensor signal to a first output circuit, said first output circuit providing a first output signal indicative of the sensed condition;

monitoring the operation of the output circuits and the signal sensor element by a supervisor circuit, said supervisor circuit forcing the first output signal or the second output into a diagnostics range in response to an electrical failure with the sensor element of the output circuits and combinations thereof; and

applying the sensor signal to a second output circuit, said second output circuit providing a second output signal indicative of the sensed condition, wherein the first and second output signals are two of multiple outputs from the sensor element and the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system.

Claim 23. (Previously Presented) The system according to claim 8 further comprising shared circuits coupled to the sensor element in the first and second output circuits, said shared circuits including circuit elements used by both the first and second output circuits.

Claim 24. (Previously Presented) The system according to claim 8 wherein the sensor element is selected from the group consisting of Hall-effect sensors, inductive sensors, magneto-resistive sensors, encoders, and potentiometers.

Claim 25. (Previously Presented) The system according to claim 8 wherein the sensing system monitors the condition of a parameter or component in a vehicle.

Claim 26. (Previously Presented) The system according to claim 25 wherein the sensing system monitors a throttle plate position and a throttle body.

Claim 27. (Previously Presented) The system according to claim 19 wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system.

Claim 28. (Previously Presented) The system according to claim 19 further comprising shared circuits coupled to the sensor element in the first and second output circuits, said shared circuits including circuit elements used by both the first and second output circuits.

Claim 29. (Previously Presented) The system according to claim 19 wherein the sensor element is selected from the group consisting of Hall-effect sensors, inductive sensors, magneto-resistive sensors, encoders, and potentiometers.

Claim 30. (Previously Presented) The system according to claim 19 wherein the sensing system monitors the condition of a parameter or component in a vehicle.

Claim 31. (Previously Presented) The system according to claim 30 wherein the sensing system monitors a throttle plate position and a throttle body.

Claim 32. (Previously Presented) The system according to claim 20 further comprising shared circuits coupled to the sensor element in the first and second output

circuits, said shared circuits including circuit elements used by both the first and second output circuits.

Claim 33. (Cancelled)

Claim 34. (Previously Presented) The system according to claim 20 wherein the sensor element is selected from a group consisting of Hall-effect sensors, inductive sensors, magneto-resistive sensors, encoders, and potentiometers.

Claim 35. (Previously Presented) The system according to claim 20 wherein the sensing system monitors the condition of a parameter or component in a vehicle.

Claim 36. (Previously Presented) The system according to claim 35 wherein the sensing system monitors a throttle plate position and a throttle body.

Claim 37. (Previously Presented) The method according to claim 21 further comprising applying the sensor signal to shared circuits before applying the sensor signal to the first and second output circuits.

Claim 38. (Previously Presented) The method according to claim 21 wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during their normal operation of the system.

Claim 39. (Previously Presented) The method according to claim 21 wherein the parameter is the position of a throttle plate.

Claim 40. (Previously Presented) The method according to claim 22 further comprising applying the sensor signal to shared circuits before applying the sensor signal to the first and second output circuits.

Claim 41. (Cancelled)

Claim 42. (Previously Presented) The method according to claim 22 wherein the parameter is the position of a throttle plate.

Claim 43. (Previously Presented) A sensing system for monitoring a parameter of a vehicle, said system comprising:

a single sensor element for sensing the parameter, said single sensor element providing a sensor signal;

shared circuits coupled to the sensor element, said shared circuits providing sensing system operations;

a first output circuit responsive to the sensor signal from the shared circuits, said first output circuit providing a first output signal;

a second output circuit responsive to the sensor signal from the shared circuits, said second output circuit providing a second output signal, wherein the first and second output signals are multiple outputs from the sensor element;

a supervisor circuit, said supervisor circuit monitoring the sensor element and the output circuits, said supervisor circuits forcing the first or second output signals to

change to a diagnostics range in response to an electrical failure with the sensor element or the output circuit and combinations thereof; and

wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system.

Claim 44. (Previously Presented) The system according to claim 43 wherein the sensor element is selected from the group consisting of Hall-effect sensors, inductive sensors, magneto-resistive sensors, encoders and potentiometers.

Claim 45. (Previously Presented) The system according to claim 43 wherein the sensing system monitors a throttle plate position in a throttle body.

Claim 46. (New) A sensing system for measuring a parameter for a controller, said system comprising:

a single sensor element, said single sensor element providing a sensor signal that varies with the measured parameter;

a first output circuit responsive to the sensor signal and providing a first output signal to said controller;

a second output circuit responsive to the sensor signal and providing a second output signal to said controller, wherein the first and second output signals are two of multiple outputs from the single sensor element, and wherein the first output circuit and the second output circuit change the sensor signal in a different manner so that the first output signal and the second output signal change differently from each other during normal operation of the system; and

a supervisor circuit, said supervisor circuit monitoring the sensor element and the output circuits, said supervisor circuit forcing the first or second output signals to change to a diagnostics range in response to an electrical failure with the sensor element or the output circuits and combinations thereof.

Claim 47. (New) A method of sensing a parameter for a controller, said method comprising:

sensing the parameter with a single sensor element and providing a sensor signal indicative of the parameter;

applying the sensor signal to a first output circuit, said first output circuit providing a first output signal indicative of the sensed condition to said controller;

applying the sensor signal to a second output circuit, said second output circuit providing a second output signal to said controller indicative of the sensed condition, wherein the first and second output signals are two of multiple outputs from the sensor element; and,

monitoring the operation of the output circuits and the single sensor element by a supervisor circuit, said supervisor circuit forcing the first output signal or the second output signal into a diagnostic range in response to an electrical failure with the sensor element or the output circuits and combinations thereof.